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A REMARKABLE NEW AFRICAN AMISEGINE WASP (HYMENOPTERA: CHRYSIDIDAE: AMISEGINAE)

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Abstract.—***Anachrysis paradoxa,*** new genus and species, is described from Transvaal, South Africa and Botswana. Its affinities are with New World genera of Amiseginae rather than with other Ethiopian genera. It is hypothesized that ***paradoxa*** is a relict of a more ancient primitive amisegine fauna.

The discovery of a primitive wasp in a zoogeographic area where all previously known genera are extremely specialized is extraordinary. The new African amisegine described here is primitive in being fully winged in both sexes with a basically unmodified mesosomal structure. The five previously known African genera are highly modified creatures with a greatly altered mesosoma, flightless in both sexes, tiny wings, if present at all, concealed beneath the laterally expanded scutum.

Hosts are unknown for any African Amiseginae, but all females have sharp piercing mandibles, characteristic of the entire subfamily. These are adapted for penetration of the tough shell of the host eggs, first to feed on some of the fluid contents and then to oviposit therein. I listed the known hosts of nine Nearctic, Neotropical and Australian species (1983a: 8, table 1); all are walking sticks (Phasmatodea). I presume that the African species also parasitize eggs of Phasmatodea because of the uniform shape of the female mandibles.

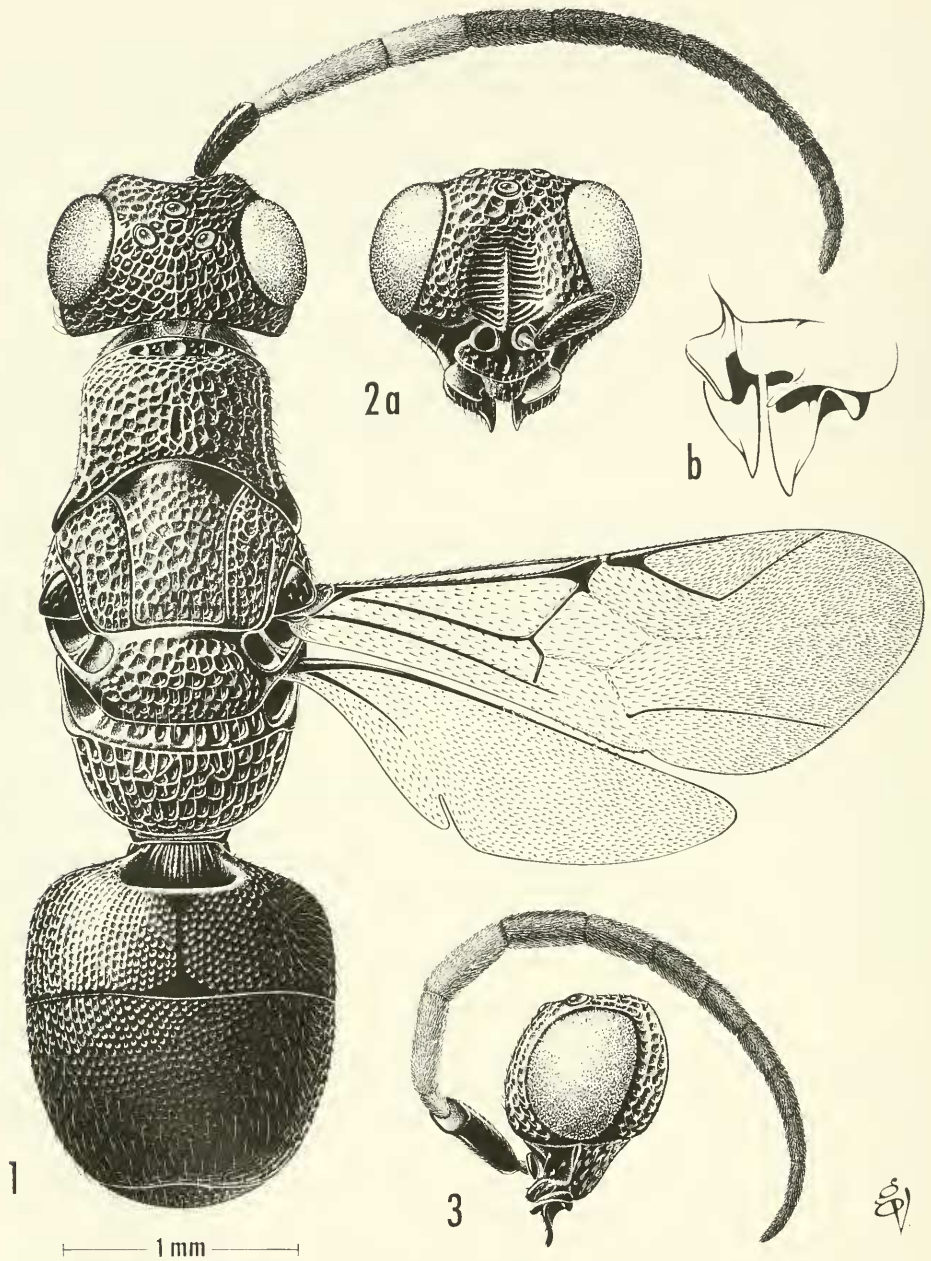
Anachrysis Krombein, New Genus

Type-species.—*Anachrysis paradoxa* Krombein, by present designation.

Etymology.—The derivation is from the Greek *an,* not, and *Chrysis* Linnaeus, in allusion to its striking resemblance to many members of the Chrysidinae. The gender is feminine.

Diagnosis.—Moderately large, relatively slender, coarsely sculptured, fully winged Amiseginae with metallic blue integument.

Male.—Head in frontal view (Fig. 2a) about as high as wide, sides converging below; eyes moderately bulging, clothed with short, rather sparse microtrichiae, height 0.6 times distance from apex of clypeus to top of head; mandible large, flattened toward apex, dentate at tip; clypeal base raised into a low broad triangle, apical section depressed and thin, medially punctate, laterally smooth with edge reflexed outward into a colorless lamella (Fig. 2b), margin narrowly emarginate between the median and lateral areas; scapal basin moderately deep, margins not ridged; head unusually long behind eyes; occipital carina absent, but posterior and lateral margins of head angled abruptly to posterior surface; head in lateral



Figs. 1–3. *Anachrysis paradoxa*. 1, Dorsal aspect, left antenna and wings, and legs not shown. 2a, Head, frontal view, most of antennae not shown. 2b, Clypeus and mandibles, oblique frontolateral view, enlarged. 3, Head, lateral aspect.

view (Fig. 3); malar space with an oblique groove from lower eye orbit toward posterior mandibular condyle, 0.46 times eye height; gena abruptly widened behind lower third of eye; head posteriorly concave above hypostoma, carina of latter weak; antenna 13-segmented, elongate, scape three-fourths as long as pedicel

and first flagellar segment combined, flagellum with short dense suberect setae, segments twice or more as long as wide, tyli lacking.

Thorax in dorsal view (Fig. 1); pronotum long, 0.8 times length of scutum, disk lacking anterior and lateral carinae, depressed anteriorly and with three small deep pits, a short deep median groove near posterior margin, lobes not extending to tegulae; scutum with notauli complete, curved outwardly on basal third, converging posteriorly, parapsidal furrow on posterior half straight; scutellum 0.6 times as long as scutum; metanotum narrow, about a fourth as long as scutellum; mesopleural disk carinate anteriorly and with shallow furrow from a short distance below wing base running obliquely downward to edge of sclerite; propodeum rounded posteriorly, without posterolateral angles; forewing with radial vein extending about as far toward wing apex as costa, continuing to wing margin at an angle as a dark streak, basal vein with a small stub representing remnant of cubital vein, two discoidal cells delimited by wing creases, subdiscoidal vein a dark streak; hind wing with three hamuli about two-thirds from wing base; mid coxae slightly separated; tibial spurs 1-2-2; tarsi with short suberect bristles beneath; tarsal claw with small erect subbasal tooth.

Abdomen presumably with four normally exposed segments, but fourth tergum retracted in unique type, five visible sterna; apical margin of both second tergum and sternum with shallow median emargination.

Female.—Head as in male except mandible stout at base, tapering gradually to a slender acute apex, clypeal margin evenly rounded, without reflexed lamella laterally, and antenna 13-segmented, short and stout, scape as long as pedicel and first flagellar segment combined, the latter 0.9 times as long as 2–4 combined, segments 3–11 short, mostly as broad as long, flattened beneath and clothed with dense sensilla of several types (see Krombein, 1983a: 13, Figs. 39–45).

Thorax and appendages as in male except pronotum near posterior margin with a vague transverse carina on each side of the short median groove.

Abdomen with four exposed segments, ovipositor exserted, apical margin of second tergum convex, that of second sternum with shallow median emargination.

Anachrysis paradoxa Krombein, New Species

The species is known from a male from Langjan Nature Reserve, Transvaal, South Africa, and four females from Farmers Brigade, Serowe, Botswana, about 250 km WNW of the Langjan area.

All wasps were taken in Malaise traps in open savanna. The male was collected in a vegetation type known generally in South Africa as sandveld. The kind of flora occurring at Langjan was described more precisely by Acocks (1975: 34–35, Fig. 22) as arid sweet bushveld, type b, *Grewia flava* veld. The average annual rainfall in bushveld ranges from 500 to 750 mm. C. D. Eardley wrote that the common trees in Langjan are *Grewia* spp., *Combretum apiculatum* Sonder, *Acacia* spp. and *Dichrostachys cinerea* Wight and Arnott. Several Malaise traps were operated in different areas of the Reserve, so there is no information on the specific tree which might have hosted the stick insect from whose egg the wasp emerged. The soil is very sandy in the Reserve.

The females were collected in traps on soil with interspersed stones or gravel, the dominant trees being *A. nigrescens* Oliver and *C. apiculatum* with *Grewia* sp. and *D. cinerea* growing nearby. P. Forchhammer stated that the altitude around

Serowe is about 1500 m and that the vegetation was classified by Weare and Yalala (1971) as *Acacia nigrescens/Combretum apiculatum* tree savanna. He also mentioned that the rainfall around Serowe during periods of insect activity ranged from 214 to 721 mm in the seasons 1977–78 through 1983–84 (no record for 1981–82). The pristine condition of all females suggests that they had emerged only a short time before their capture, and the scattered collecting dates indicate that breeding may occur over an extended period in arid semitropical to tropical regions.

Etymology.—The name is from the Latin *paradoxus,* contrary to all expectation.

Diagnosis.—Characters of genus and as follows.

Male.—Length 4.5 mm, forewing 2.6 mm. Integument metallic blue, pedicel and base of flagellum light brown, apical segments and tarsi darker brown; wings hyaline, veins dark. Vestiture silvery, sparse, short and erect.

Head (Figs. 1–3): Basal raised area of clypeus with a few scattered small punctures; scapal basin closely transversely carinate, a weak narrow ridge medially; head laterad of scapal basin and on top closely foveolate; gena 0.46 times eye height; vertex with median carina; antenna elongate; flagellum decreasing gradually in width toward apex, first segment a third as wide as long, relative lengths of segments as 37:30:24:24:22:22:19:16:15:13:18.

Thorax with slightly larger foveolations than head; propodeum with somewhat larger irregular reticulations, more strongly so dorsally and posteriorly than laterally.

Disk of first tergum with small close punctures, a narrow median area smooth; second tergum with small close punctures, those laterally arranged in longitudinal rows, posteriorly in middle with sparse punctures, posterolaterally with a few weak oblique carinae; exposed part of third tergum with scattered tiny punctures; second sternum with small subcontiguous punctures except narrowly along midline and posteriorly.

Female.—Length 4.9 mm, forewing 3.0 mm. Coloration and vestiture as in male except flagellum black, mandible light red, tarsi brown.

Head as in species description of male except antenna shorter, flagellum stout, relative lengths of segments as 16:6:7:6:6:6:6:5:5:7, segment 1 three times as long as greatest width, segments 2–7 as broad as long, segments 8–10 somewhat longer than wide, and 11 twice its width.

Thorax and abdomen as in specific description of male.

Holotype: ♂, SOUTH AFRICA, TVL (Transvaal), Langjan Nature Res(erve), 22:52 S, 29:14 E, 10–20 January 1980, G. L. Prinsloo, C. Kok, C. D. Eardley, P. Smith, in Malaise trap; (National Collection of Insects, Pretoria, South Africa). *Allotype:* ♀, BOTSWANA, Serowe, (22:25 S, 26:44 E), VI-1985, P. Forchhammer, in Malaise trap; (British Museum (Natural History)). *Paratypes:* 3 ♀, same locality and collector as allotype but 26 May, 11 June and 2–6 August 1983, presumably all taken in Malaise trap but not so labeled.

Remarks.—I believe that the male and females represent opposite sexes of the same species. Color and integumental sculpture are remarkably concordant. Such notable differences as occur in the shape of the mandibles, clypeus, antennae and number of normally exposed abdominal segments are consistent with the sexual dimorphism found in many other Amiseginae. The one differentiating character not likely to be sex-linked is the presence in only the female of a vaguely defined

transverse carina near the posterior margin of the pronotum. Although the holo- and allotype localities are some 250 km distant, it should be noted that each is open savannah with many of the same trees and grasses.

The paratypes are very similar to the type in all details except that the female collected in August has red tibiae and tarsi.

Discussion

The Amiseginae are essentially a pantropical group with a Gondwana-type distribution (Krombein, 1983a, map on p. 6). Its surprising absence from Madagascar may reflect failure to collect in and on leaf litter, the specialized habitat where most amisegines are to be found. Only two fossil Amiseginae are known, *Protamisega* Evans from Siberian amber of Cretaceous age and a new genus (Krombein, in prep.) from Baltic amber of Eocene age, both areas with a warm climate during those eras.

Thirty years ago I reviewed the available material of recent Amiseginae (Krombein, 1957) and recognized three distinct groupings based primarily upon thoracic modifications. As modified by additional material in subsequent papers (1960, 1983a, b, 1984) these divisions may be characterized as follows. The primitive American Series has a narrow metanotum (absent in *Microsega* Krombein) that is noticeably shorter than the scutellum, is fully winged in both sexes except *Microsega,* and has the propodeal dorsum rounded or dentate posterolaterally. The more specialized Australasian Series has a metanotum as long as or longer than the scutellum, fully winged males, fully winged or brachypterous flightless females, and the propodeal dorsum angulate or dentate posterolaterally. The highly specialized African Series has an occipital carina, lacks a median pronotal groove, is flightless in both sexes, has the scutum expanded laterally so that tiny wings and tegulae, if present at all, are concealed in dorsal view, an enlarged metanotum covering almost the entire dorsal area of the mesosoma posteriorly, and the propodeum virtually absent dorsally and sloping gradually downward or abruptly declivous posteriorly, the dorsal posterolateral thoracic angles not produced.

The unexpected, remarkable new African taxon described above is more similar to the American genera than it is to any of the previously known African genera. It has a narrow metanotum, is fully winged and the propodeal dorsum is rounded posterolaterally.

The Neotropical *Duckeia* Costa Lima is similar to *Anachrysis* in such characters as the longer malar space (ca. 0.6 times eye height), well-developed, transversely carinate scapal basin, flagellar segments in female broader, flattened and densely covered beneath with numerous sensilla, the lack of an occipital carina, a median pronotal groove, the propodeal dorsum rounded posterolaterally and the metallic blue, coarsely sculptured integument. (This particular integument occurs elsewhere in the Amiseginae only in the Oriental *Rohweria* Fouts.) *Duckeia* differs from *Anachrysis* in its stocky build, in having the darkened streak almost closing the marginal cell curving evenly toward the wing margin rather than being at an angle to the radial vein, in the strong flange posteriorly on the gena and in having the base of the second abdominal sternum raised into a median projection.

Three other New World genera lack an occipital carina and have the propodeal dorsum rounded posterolaterally. *Amisega* Cameron and its probable synonym, *Mesitiopterus* Ashmead, have a short malar space less than 0.2 times the eye

height, comparatively longer flagellar segments in the females, not so flattened beneath and furnished with fewer sensilla, lack a median pronotal groove and a marginal cell shaped as in *Duckeia*. *Microsega* Krombein is highly aberrant and the most specialized of the New World genera; both sexes lack a metanotum and have the wings reduced to pads no larger than the tegulae.

Adelphe Mocsary and *Nesogyne* Krombein, formerly placed in the Adelphinae, are probably the least closely related of the New World genera. They have a poorly developed scapal basin, an occipital carina and the propodeal dorsum is dentate or spinose posterolaterally.

Anachrysis is probably to be regarded as a relict in the African region, and not directly ancestral to the rest of that fauna which is likely to have evolved from the Australasian Series. Unquestionably its affinities are with the New World genera. Inevitably one wonders whether other relict genera may not be found elsewhere in the Old World. My collecting in Sri Lanka (1983a) was a convincing demonstration that there must be a large uncollected amisegine fauna in the Oriental Region.

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